	Type	Hits	Search Text
1	BRS	592	((outer or inner) adj join)
2	BRS	91	((outer or inner) adj join)
3	BRS	5	((outer or inner) adj join) and path$3
4	BRS	318	((outer or inner) adj join) and path$3
5	BRS	81	((outer NEAR join) AND path AND (inner NEAR join) AND SQL) AND ((rewrit$3 OR optimizing OR optimization OR optimiz$2) NEAR3 quer$3)
6	BRS	0	(((object NEAR oriented) AND quer$3) OR OO-SQL) AND ((outer NEAR join) AND path AND (inner NEAR join)) AND ((EQUAL AND (LESS ADJ THAN) AND (GREATER ADJ THAN)) SAME WHERE)
7	BRS	16392	(((object NEAR oriented) AND quer$3) OR OO-SQL)
8	BRS	753	S66 and join and path$3
9	BRS	1751	S66 and join and path$3
10	BRS	69	(((object NEAR oriented) AND quer$3) OR OO-SQL) AND ((outer NEAR join) AND path AND (inner NEAR join))
11	BRS	69	(((object NEAR oriented) AND quer$3) OR OO-SQL) AND ((outer NEAR join) AND path AND (inner NEAR join)) and operat$3
12	BRS	3	SQL and WHERE and ((EQUAL or (LESS ADJ THAN) or (GREATER ADJ THAN)))
13	BRS	27	((outer NEAR join) AND path$1 AND (inner NEAR join)) same translat$4
14	BRS	30	((outer NEAR join) AND (path adj2 expression) AND (inner NEAR join)) and translat$3
15	BRS	30	((outer NEAR join) AND (path adj2 expression) AND (inner NEAR join)) and translat$3
16	BRS	23	((outer NEAR join) AND (inner NEAR join)) and translat$3 and quantifier and table$1

	DBs
1	US-PGPUB; USPAT; USOCR
2	EPO; JPO; DERWENT; IBM_TDB
3	EPO; JPO; DERWENT; IBM_TDB
4	US-PGPUB; USPAT; USOCR
5	US-PGPUB; USPAT; USOCR
6	US-PGPUB; USPAT; USOCR
7	US-PGPUB; USPAT; USOCR
8	USPAT
9	US-PGPUB; USPAT; USOCR
10	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
11	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
12	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
13	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
14	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
15	US-PGPUB; USPAT; USOCR
16	US-PGPUB; USPAT; USOCR

	Type	Hits	Search Text
17	BRS	68	((((object NEAR oriented) AND quer$3) OR OO-SQL)) AND ((outer NEAR join) AND path$1 AND (inner NEAR join)) AND (SQL AND ((LIKE OR IN OR BETWEEN) SAME quer$3))
18	BRS	81	((outer NEAR join) AND path AND (inner NEAR join) AND SQL) AND ((rewrit$3 OR optimizing OR optimization OR optimiz$2) NEAR3 quer$3)
19	BRS	550	S60 and (relational SQl)
20	BRS	152	S60 and (Object-oriented OO)
21	BRS	150	S86 and S87
22	BRS	1	((outer NEAR join) AND (path adj2 expression) AND (inner NEAR join)) and translat$3 and quantifier
23	BRS	0	((outer NEAR join) AND (path adj2 expression) AND (inner NEAR join)) and translat$3 and quantifier
24	BRS	23	SQL and ((outer NEAR join) AND (inner NEAR join)) and translat$3 and quantifier
25	BRS	1	SQL and ((outer NEAR join) AND (path$1 adj2 expression) AND (inner NEAR join)) and translat$3 and quantifier
26	BRS	4	(Object-oriented) and SQL and ((outer NEAR join) AND (path adj2 expression) AND (inner NEAR join)) and translat$3
27	BRS	30	SQL and ((outer NEAR join) AND (path$1 adj2 expression) AND (inner NEAR join)) and translat$3
28	BRS	92	((outer NEAR join) AND path AND (inner NEAR join)) and translat$3
29	BRS	133	707/1,4,100,200.ccls. and ((outer or inner) adj join) and path$3
30	BRS	87	707/2.ccls. and ((outer or inner) adj join) and path$3
31	BRS	71	707/4.ccls. and ((outer or inner) adj join) and path$3

32	BRS	15	707/101.ccls. and ((outer or inner) adj join) and path$3

	DBs
17	US-PGPUB; USPAT; USOCR
18	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
19	US-PGPUB; USPAT; USOCR
20	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
21	US-PGPUB; USPAT; USOCR
22	US-PGPUB; USPAT; USOCR
23	EPO; JPO; DERWENT; IBM_TDB
24	US-PGPUB; USPAT; USOCR
25	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
26	US-PGPUB; USPAT; USOCR
27	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB
28	US-PGPUB; USPAT; USOCR
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30	US-PGPUB; USPAT; USOCR
31	US-PGPUB; USPAT; USOCR

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1. **Parallel double sort-merge algorithm for object-oriented collection join queries**
Taniar, D.; Rahayu, W.;
High Performance Computing on the Information Superhighway, 1997. HPC Asia '97
28 April-2 May 1997 Page(s):122 - 127
Digital Object Identifier 10.1109/HPC.1997.592134
AbstractPlus | Full Text: PDF(532 KB) IEEE CNF
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2. **A join algorithm utilizing multiple path indexes in object-oriented database system**
Wan-Sup Cho; Seung-Sun Lee; Yong-Ik Yoon; Kyu-Young Whang;
Engineering of Complex Computer Systems, 1996. Proceedings., Second IEEE Internati
Conference on
21-25 Oct. 1996 Page(s):376 - 382
Digital Object Identifier 10.1109/ICECCS.1996.558468
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3. **Design and performance evaluation of parallel algorithms for path expressions in database systems on NOW**
Qiang Fang; Guoren Wang; Ge Yu; Kaneko, K.; Makinouchi, A.;
Database Applications in Non-Traditional Environments, 1999. (DANTE '99) Proceedings
International Symposium on
1999 Page(s):395 - 402
Digital Object Identifier 10.1109/DANTE.1999.844984
AbstractPlus | Full Text: PDF(316 KB) IEEE CNF
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4. **Comparison of parallel algorithms for path expression query in object database sy**
Guoren Wang; Ge Yu; Kaneko, K.; Makinouchi, A.;
Database Systems for Advanced Applications, 2001. Proceedings. Seventh International
Conference on
18-21 April 2001 Page(s):250 - 257
Digital Object Identifier 10.1109/DASFAA.2001.916385
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1 Object oriented relational database with SQL interface
Behrooz Seyed-Abbassi
March 1993 **Proceedings of the 1993 ACM conference on Computer science CSC '93**
Publisher: ACM Press
Full text available: pdf(1.43 MB) Additional Information: full citation, abstract, references, index terms

An object oriented relational database management system to support heterogeneous object classes of statistical (numeric and text), image, text and sound information is considered. By employing a user friendly interface and Structured Query Language (SQL) capability at the user level, this database with a three level architecture utilizes an extended SQL to operate on complex objects and to support database processing functions such as retrieve, join and overlay. These operations also suppo ...

2 Observations on the ODMG-93 proposal for an object-oriented database language
Won Kim
March 1994 **ACM SIGMOD Record**, Volume 23 Issue 1
Publisher: ACM Press
Full text available: pdf(836.33 KB) Additional Information: full citation, cited by, index terms

3 Extending SQL-92 for OODB access: design and implementation experience
Jerry Kiernan, Michael J. Carey
October 1995 **ACM SIGPLAN Notices , Proceedings of the tenth annual conference on Object-oriented programming systems, languages, and applications OOPSLA '95**, Volume 30 Issue 10
Publisher: ACM Press
Full text available: pdf(2.10 MB) Additional Information: full citation, abstract, references, citings, index terms

This paper describes the design and implementation of a query engine that provides extended SQL-based access to the data managed by an object-oriented database system. This query engine allows extended SQL queries to be embedded in C++ programs or issued interactively as from a command line interface. The language supported by the engine is the complete SQL-92 select statement plus object extensions for navigating along paths and embedded structures, querying nested sets, and invoking member fun ...

4 Object orientation in multidatabase systems
Evaggelia Pitoura, Omran Bukhres, Ahmed Elmagarmid
June 1995 **ACM Computing Surveys (CSUR)**, Volume 27 Issue 2

Publisher: ACM Press

Full text available: pdf(4.85 MB) Additional Information: full citation, abstract, references, citings, index terms, review

A multidatabase system (MDBS) is a confederation of preexisting distributed, heterogeneous, and autonomous database systems. There has been a recent proliferation of research suggesting the application of object-oriented techniques to facilitate the complex task of designing and implementing MDBSs. Although this approach seems promising, the lack of a general framework impedes any further development. The goal of this paper is to provide a concrete analysis and categorization of the various ...

Keywords: distributed objects, federated databases, integration, multidatabases, views

5 On type systems for object-oriented database programming languages

Yuri Leontiev, M. Tamer Özsu, Duane Szafron

December 2002 **ACM Computing Surveys (CSUR)**, Volume 34 Issue 4

Publisher: ACM Press

Full text available: pdf(346.87 KB) Additional Information: full citation, abstract, references, citings, index terms

The concept of an object-oriented database programming language (OODBPL) is appealing because it has the potential of combining the advantages of object orientation and database programming to yield a powerful and universal programming language design. A uniform and consistent combination of object orientation and database programming, however, is not straightforward. Since one of the main components of an object-oriented programming language is its type system, one of the first problems that ar ...

Keywords: OODB, OODBPL, object-oriented database programming language, type checking, typing

6 TOOLI: Table Object-Oriented Language Interface

Brian Meyerpeter, Razan Diab

January 1992 **ACM SIGPLAN OOPS Messenger**, Volume 3 Issue 1

Publisher: ACM Press

Full text available: pdf(532.04 KB) Additional Information: full citation, abstract, index terms

Object-oriented database management systems address complexity and conceptual modeling but lack standards, availability, and reliability. Object-oriented programming interfaces to object-oriented databases address application extendibility and flexibility but also lack standards. Relational database systems are available and robust, but their programming interfaces, although standardized, do not offer the benefits that object-oriented systems provide. This paper presents the requirements an ...

7 The Hybrid Object-Relational Architecture (HORA): an integration of object-oriented and relational technology

Jeff Sutherland, Matthew Pope, Ken Rugg

March 1993 **Proceedings of the 1993 ACM/SIGAPP symposium on Applied computing: states of the art and practice SAC '93**

Publisher: ACM Press

Full text available: pdf(621.99 KB) Additional Information: full citation, references, citings, index terms, review

8 SQL: 1999, formerly known as SQL3

Andrew Eisenberg, Jim Melton

March 1999 **ACM SIGMOD Record**, Volume 28 Issue 1

Publisher: ACM Press
Full text available: pdf(680.60 KB) Additional Information: full citation, abstract, citings, index terms

For several years now, you've been hearing and reading about an emerging standard that everybody has been calling SQL3. Intended as a major enhancement of the current second generation SQL standard, commonly called SQL-92 because of the year it was published, SQL3 was originally planned to be issued in about 1996...but things didn't go as planned. As you may be aware, SQL3 has been characterized as "object-oriented SQL" and is the foundation for several object-re ...

9 Schema integration for multidatabases using the unified relational and object-oriented model
Soon M. Chung, Pyeong S. Mah
February 1995 **Proceedings of the 1995 ACM 23rd annual conference on Computer science CSC '95**
Publisher: ACM Press
Full text available: pdf(1.01 MB) Additional Information: full citation, references, index terms

10 Object-oriented technology: TIGUKAT object management system: initial design and current directions
M. Tamer Özsu, Randal Peters, Boman Irani, Anna Lipka, Adriana Munoz, Duane Szafron
October 1993 **Proceedings of the 1993 conference of the Centre for Advanced Studies on Collaborative research: software engineering - Volume 1 CASCON '93**
Publisher: IBM Press
Full text available: pdf(1.53 MB) Additional Information: full citation, abstract, references

We describe the TIGUKAT object management system that is under development at the Laboratory for Database Systems Research of the University of Alberta. TIGUKAT has a novel object model whose identifying characteristics include a purely behavioral semantics and a uniform approach to objects. Everything in the system is a first-class object with well-defined behavior. The computational model supported is one of applying behaviors to objects. A query model has been developed for TIGUKAT that is co ...

11 Using the co-existence approach to achieve combined functionality of object-oriented and relational systems
R. Ananthanarayanan, V. Gottemukkala, W. Kaefer, T. J. Lehman, H. Pirahesh
June 1993 **ACM SIGMOD Record , Proceedings of the 1993 ACM SIGMOD international conference on Management of data SIGMOD '93**, Volume 22 Issue 2
Publisher: ACM Press
Full text available: pdf(1.31 MB) Additional Information: full citation, abstract, references, citings, index terms

Once considered a novelty, object oriented systems have now entered the mainstream. Their impressive performance and rich type systems have created a demand for object oriented features in other areas, such as relational database systems. We believe the current efforts to combine object oriented and relational features into a single hybrid system will fall short of the mark, whereas our approach, the co-existence approach, has the distinction of requiring far less work, but ...

12 Databases: SQL DOM: compile time checking of dynamic SQL statements
Russell A. McClure, Ingolf H. Krüger
May 2005 **Proceedings of the 27th international conference on Software engineering ICSE '05 , Proceedings of the 27th international conference on Software engineering ICSE '05**
Publisher: ACM Press, IEEE Computer Society
Full text available: pdf(353.48 KB) Additional Information: full citation, abstract, references, citings, index terms

Publisher Site

Most object oriented applications that involve persistent data interact with a relational database. The most common interaction mechanism is a call level interface (CLI) such as ODBC or JDBC. While there are many advantages to using a CLI -- expressive power and performance being two of the most key -- there are also drawbacks. Applications communicate through a CLI by constructing strings that contain SQL statements. These SQL statements are only checked for correctness at runtime, tend to be f ...

Keywords: SQL, SQL DOM, SQL injection, SQL strings, dynamic SQL, impedance mismatch

13 Querying object-oriented databases

Michael Kifer, Won Kim, Yehoshua Sagiv

June 1992 **ACM SIGMOD Record , Proceedings of the 1992 ACM SIGMOD international conference on Management of data SIGMOD '92**, Volume 21 Issue 2

Publisher: ACM Press

Full text available: pdf(1.35 MB) Additional Information: full citation, references, citings, index terms

14 Implementation aspects of an object-oriented DBMS

Asuman Dogac, Mehmet Altinel, Cetin Ozkan, Ilker Durusoy

March 1995 **ACM SIGMOD Record**, Volume 24 Issue 1

Publisher: ACM Press

Full text available: pdf(755.27 KB) Additional Information: full citation, abstract, index terms

This paper describes the design and implementation of an OODBMS, namely the METU Object-Oriented DBMS (MOOD). MOOD [Dog 94b] is developed on the Exodus Storage Manager (ESM) [ESM 92] and therefore some of the kernel functions like storage management, concurrency control, backup and recovery of data were readily available through ESM. In addition ESM has a client-server architecture and each MOOD process is a client application in ESM. The kernel functions provided by MOOD are the optimization an ...

15 Research directions in object-oriented database systems

Won Kim

April 1990 **Proceedings of the ninth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems PODS '90**

Publisher: ACM Press

Full text available: pdf(2.02 MB) Additional Information: full citation, abstract, references, citings, index terms

The set of object-oriented concepts found in object-oriented programming languages forms a good basis for a data model for post-relational database systems which will extend the domain of database applications beyond conventional business data processing. However, despite the high level of research and development activities during the past several years, there is no standard object-oriented data model, and criticisms and concerns about the field still remain. In this paper, I will first pr ...

16 MoodView: an advanced graphical user interface for OODBMSs

İsmailcem Budak Arpinar, Asuman Doğaç, Cem Evrendilek

December 1993 **ACM SIGMOD Record**, Volume 22 Issue 4

Publisher: ACM Press

Full text available: pdf(777.58 KB) Additional Information: full citation, abstract, citings, index terms

OODBMSs need more than declarative query languages and programming languages as their interfaces since they are designed and implemented for complex applications requiring more advanced and easy to use visual interfaces. We have developed a

complete programming environment for this purpose, called MoodView. MoodView translates all the user actions performed through its graphical interface to SQL statements and therefore it can be ported onto any object-oriented database systems using SQL.
Keywords: graphical user interfaces, object-oriented databases

17 SQL and beyond
Mark Ashworth
September 1994 **StandardView**, Volume 2 Issue 3
Publisher: ACM Press
Full text available: pdf(481.04 KB) Additional Information: full citation, references, index terms

18 Object subclass hierarchy in SQL: a simple approach
Chenho Kung
July 1990 **Communications of the ACM**, Volume 33 Issue 7
Publisher: ACM Press
Full text available: pdf(1.01 MB) Additional Information: full citation, abstract, references, citings, index terms, review

The object subclass hierarchy is a useful way of modeling property and behavior inheritance. It can be implemented on a relational DBMS using views.

Keywords: inclusion constraints, normal forms, object-oriented, query processing, relational databases

19 Database systems I: Incorporating Object Relationship Notation (ORN) into SQL: revisited
Bryon K. Ehlmann
March 2006 **Proceedings of the 44th annual Southeast regional conference ACM-SE 44**
Publisher: ACM Press
Full text available: pdf(184.94 KB) Additional Information: full citation, abstract, references, index terms

Diagrams widely used to model databases capture important semantics about the associations between objects. Additional association semantics can be captured when these diagrams are extended with Object Relationship Notation (ORN). Yet, the association semantics so easily expressed in database models are difficult to translate into SQL. This problem has existed for many years and was first addressed by this author in a paper written almost ten years ago. Since then, modeling diagrams, SQL, and OR ...

Keywords: ORN, association, relationship semantics

20 Object-oriented databases in our curricula
Celia Schahczenski
October 2000 **Journal of Computing Sciences in Colleges , Proceedings of the seventh annual CCSC Midwestern conference on Small colleges , Proceedings of the eighth annual consortium on Computing in Small Colleges Rocky Mountain conference , Proceedings of the seventh annual consortium on Computing in small colleges midwestern conference**, Volume 16 Issue 1
Publisher: Consortium for Computing Sciences in Colleges
Full text available: pdf(96.75 KB) Additional Information: full citation, references, index terms